

## 16.4: Discussion

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### Discussion

Write a minimum one-page (12 font, single spaced) discussion on the experiment conducted this week. Address **at least one question in each category** as fully as possible integrating the collected data, providing explanations for the observed trends, and evaluating whether your original assumptions about the experiment were validated by the results. **The assignment will be graded on completeness, clarity of the explanations and the meaningful integration of the collected and calculated data.** Correct grammar and appropriate format for the chemical formulae and chemical reactions is expected.

1. (Existing knowledge, research, and views) Define ideal gases in your own words and describe the conditions under which a gas will behave as an ideal gas.
2. (Analysis) Describe your experimental conditions and compare them to the conditions described in your answer to Question 1. Explain how this knowledge influences the type of equations that you can use to do your calculations.
3. (Interpretation) Using your balanced chemical equation that describes the observed reaction, interpret its meaning on the microscopic (molecules/formula units) and macroscopic scale (moles).
4. (Interpretation) Describe and explain the method you used to identify the limiting reactant for your experiment. Use your calculated values to support your arguments.
5. (Analysis) Compare your actual yield (volume of the balloon) with your theoretical yield (calculated gas volume) and provide at least one supported argument for the difference between them. Describe the suspected cause and evaluate whether the expected impact is consistent with your calculations. (Hint: consider the solubility of carbon dioxide in water.)
6. (Analysis) Compare the % yield values from your group. Comment on the accuracy and precision of the experiment.
7. (Analysis) The molar volume should be the same for all gases when they behave as ideal gases. Consider the properties of carbon dioxide (hint: polarity and solubility in water) and use them to explain the differences between the molar volume of an ideal gas and the molar volume of your carbon dioxide.
8. (Assumptions and limitations) Identify at least one assumption that you made about CO<sub>2</sub> being suitable for this experiment. (Hint: consider polarity and solubility in water. If this assumption is not valid, describe how it impacts the volume of the gas collected in the experiment.
9. (Analysis) Propose at least two other gases that would be better suited for such an experiment and two gases that would be worse. Support your choices with relevant information about the proposed gases.

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